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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,443

02/18/2004

Misty Azara

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EXAMINER

GODBOLD, DOUGLAS

ART UNIT

PAPER NUMBER

2626

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/781,443

Applicant(s)

AZARA ET AL.

Examiner

Douglas C. Godbold

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 18 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20040218, 20060320</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is in response to application 10/781443, filed February 18, 2004. Claims 1-22 are pending in the application and have been examined.

### ***Information Disclosure Statement***

2. The Information Disclosure Statements filed February 18, 2004 and March 20, 2006 have been considered in the office action.

### ***Drawings***

3. The drawings are objected to because drawing one, reference to PC 300 is labeled 100. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

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examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The disclosure is objected to because of the following informalities: Page 8 line 5, processor 20 should be processor 30. Also paragraphs 43 and 44 discussing Figure 5 do not reference the components of the drawing.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 21 attempts to claim a carrier wave. However, this is considered non-statutory under 35 U.S.C. 101. Therefore claim 21 is rejected.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 6-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang (Visualizing spoken discourse).

9. Consider claim 1, Yang teaches a method of determining a predictive model for discourse functions (the relationship between discourse and prosody are modeled graphically, abstract.) comprising the steps of:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last

paragraph. Sections 2.1.1, - 2.4.2 show other examples of how prosodic features indicate discourse features.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

10. Consider claim 2, Yang teaches the method of claim 1, in which the discourse functions are determined based on a theory of discourse analysis (The speech data were digitized and annotated for discourse relations; page 1, column 2, line 18. It is inherent that in order to annotate discourse relations, and therefore analysis discourse, it must be based on some theory of discourse analysis.)

11. Consider claim 6, Yang teaches the method of claim 1, in which the prosodic features occur in at least one of a location: preceding, within and following the associated discourse function (In order to capture the different domains at which prosodic patterns are manifested, we analyzed the data at the within-phrase as well as the inter-phrase level, page 2 column 2, line 30. By doing this, prosodic features will be analyzed before and after as well as during the discourse function.).

12. Consider claim 7, Yang teaches the method of claim 1, in which the prosodic features are encoded within a prosodic feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2,

column 2, line 23. The data would inherently be reference together for each measurement, creating a feature vector.).

13. Consider claim 8, Yang teaches the method of claim 7, in which the prosodic feature vector is a multimodal feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. These three acoustical measurements form a multimodal feature vector for the purpose of correlation with discourse characteristics.).

14. Consider claim 9, Yang teaches the method of claim 1, in which the discourse function is an intra- sentential discourse function (section 2.1.1 shows the prosodics for the discourse function of demanding new information, which is an intra-sentential function.)

15. Consider claim 10, Yang teaches the method of claim 1, in which the discourse function is an intra- sentential discourse function (section 2.2.3 shows the prosodics for the discourse function of topic shifting, which is an inter-sentential function.)

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Chino (US Patent 5,761,637).

19. Consider claim 3, Yang teaches the method of claim 2, but does not specifically teach that the theory of discourse analysis is at least one of: the Linguistic Discourse Model, the Unified Linguistic Discourse Model, Rhetorical Structure Theory, Discourse Structure Theory and Structured Discourse Representation Theory.

However, In the same field of Discourse analysis, Chino teaches using Discourse Structure Theory for discourse analysis (Figure 7 shows a generated discourse structure for the speech input, column 6 line 13- column 7 line 28.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the discourse structure theory as taught by Chino for doing



discourse analysis as taught by Yang in order to provide a specific method for discourse analysis, allowing one to the structure of a conversation to be observed.

20. Claims 4, 5, 11, 12, and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Shriberg et al (Prosody-Based Automatic Segmentation of Speech into Sentences and Topics).

21. Consider claim 4, Yang teaches the method of claim 1, but does not specifically teach the predictive models are determined based on at least one of: machine learning, rules.

In the same field of speech analysis, Shriberg teaches predictive models determined based on at least one of: machine learning, rules (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

22. Consider claim 5, Shriberg teaches the method of claim 4, in which the machine learning based predictive models are determined based on at least one of: statistics, decision trees, Naive Bayes (Prosody models are generated using HHM and decision

trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

23. Consider claim 11, Yang teaches a system for determining predictive discourse function models (the relationship between discourse and prosody are modeled graphically, abstract.) comprising:

an input/output circuit for retrieving a corpus of at least one speech utterance (the speech data was digitized; page 1, column 2, line 18.);

and determining prosodic features associated with the at least one speech utterance (Acoustic measurements of the speech are taken such as f0, amplitude, page 1, column 2 line 23.), and which determines at least one discourse function associated with the corpus of at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.) and determines at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last paragraph. Sections 2.1.1, - 2.4.2 show other examples of how prosodic features indicate discourse features.) and determines a predictive model for discourse functions based on the prosodic features and the discourse function (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

Yang does not specifically teach that the processor itself does the analysis to determine the model between prosody and discourse.

In the same field of text analysis, Shriberg teaches using the processor to relate prosody to text functions. (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a processor inherent, abstract line 3.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

24. Consider claim 12, Yang teaches the system of claim 11, in which the discourse functions are determined based on a theory of discourse analysis (The speech data were digitized and annotated for discourse relations; page 1, column 2, line 18. It is inherent that in order to annotate discourse relations, and therefore analysis discourse, it must be based on some theory of discourse analysis.)

25. Consider claim 14, Shriberg teaches the system of claim 11, wherein the predictive models are determined based on at least one of: machine learning, rules (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

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26. Consider claim 15, Shriberg teaches the system of claim 14, in which the machine learning based predictive models are determined based on at least one of: statistics, decision trees, Naive Bayes (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

27. Consider claim 16, Yang teaches the system of claim 11, in which the prosodic features occur in at least one of a location: preceding, within and following the associated discourse function (In order to capture the different domains at which prosodic patterns are manifested, we analyzed the data at the within-phrase as well as the inter-phrase level, page 2 column 2, line 30. By doing this, prosodic features will be analyzed before and after as well as during the discourse function.).

28. Consider claim 17, Yang teaches the system of claim 11, in which the prosodic features are encoded within a prosodic feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. The data would inherently be reference together for each measurement, creating a feature vector.).

29. Consider claim 18, Yang teaches the system of claim 17, in which the prosodic feature vector is a multimodal feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column

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2, line 23. These three acoustical measurements form a multimodal feature vector for the purpose of correlation with discourse characteristics.).

30. Consider claim 19, Yang teaches the system of claim 11, in which the discourse function is an intra- sentential discourse function (section 2.1.1 shows the prosodics for the discourse function of demanding new information, which is an intra-sentential function.)

31. Consider claim 20, Yang teaches the system of claim 11, in which the discourse function is an intra- sentential discourse function (section 2.2.3 shows the prosodics for the discourse function of topic shifting, which is an inter-sentential function.)

32. Consider claim 21, Yang teaches:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (sections 2.1.1, - 2.4.2 discuss how prosodic features indicate discourse features, such as demanding of information, etc.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

But Yang does not specifically teach a carrier wave encoded to transmit a control program with instructions to complete the above steps.

In the same field of speech analysis, Shriberg teaches using a computer program to do speech analysis (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a software program inherent, abstract line 3. A software program can obviously be carried on a carrier wave.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

Consider claim 22, Yang teaches:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last paragraph. Sections 2.1.1; - 2.4.2 show other examples of how prosodic features indicate discourse features.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

But Yang does not specifically teach that these steps are executed with a computer readable medium comprising computer code usable to complete the above steps.

In the same field of speech analysis, Shriberg teaches a computer readable medium comprising computer code usable to complete speech analysis (Prosody models are generated using HMM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a software program inherent, abstract line 3. A software program must inherently be stored on a computer readable medium in order to be executed.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg

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and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

33. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Shriberg as applied to claim 11 above, and further in view of Chino.

34. Consider claim 13, Yang in view of Shriberg teaches the system of claim 12, but does not specifically teach that the theory of discourse analysis is at least one of: the Linguistic Discourse Model, the Unified Linguistic Discourse Model, Rhetorical Structure Theory, Discourse Structure Theory and Structured Discourse Representation Theory.

However, In the same field of Discourse analysis, Chino teaches using Discourse Structure Theory for discourse analysis (Figure 7 shows a generated discourse structure for the speech input, column 6 line 13- column 7 line 28.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the discourse structure theory as taught by Chino for doing discourse analysis as taught by Yang in view of Shriberg in order to provide a specific method for discourse analysis, allowing one to the structure of a conversation to be observed.



**Conclusion**


35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is listed on the notice of references cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas C. Godbold whose telephone number is (571) 270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

  
PATRICK N. EDOUARD  
SUPERVISORY PATENT EXAMINER